REMARKS

Claims 28, 30 and 37-67 are presently pending. Of these, Claims 38, 39, 43 and 53-67 are withdrawn from consideration. Support for amendment to Claim 28 is found in the specification as filed, for example at page 8, lines 11-13. No new matter has been added herewith. The following addresses the substance of the Office Action.

Obviousness

Klopfenstein et al. in view of Swerdloff et al.

Claims 28, 30, 37, 40, 49 and 51-52 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Klopfenstein et al. (2002 *Council for Agricultural Science and Technology* Issue Paper 21: 1-16) in view of Swerdloff et al. (U.S. Patent No. 4,517,004).

Klopfenstein et al. teaches: (i) identifying an animal that excretes nitrogen containing waste products onto soil; (ii) orally administering a compound to the animal; and (iii) allowing the animal to excrete waste onto soil. The Klopfenstein article does not specifically discuss nitrification and urease inhibitors. Moreover, the goals disclosed by Klopfenstein are antithetical to the goals of the presently claimed methods. On the one hand, the presently claimed methods increase the amount of soil nitrogen by reducing loss of nitrogen that would otherwise occur from soil exposed to waste from animals. On the other hand, the focus of Klopfenstein is on decreasing the total amount of nitrogen containing compounds that are excreted by the animal, with the aim of avoiding excess nitrogen deposition, which could exceed the needs of plants and leach into groundwater or build up in the soil, thereby harming the environment. Thus, Klopfenstein teaches away from the presently claimed method. There is no discussion or contemplation of affecting the conversion of nitrogen containing compounds after these are excreted from the animal.

Swerdloff et al. teaches methods of increasing the amount of soil nitrogen by applying compounds that inhibit the activity of urease and/or nitrification to soil or growth media. The reference teaches: (i) specific compounds that can be used as nitrification and urease inhibitors; and (ii) applying these compounds directly to soil or plant growth media in agricultural applications to prevent nitrification. In contrast, the presently claimed methods administer a treatment substance to an animal for the purpose of affecting the conversion of nitrogen based compounds after waste products are excreted from the animal. Thus, the compounds utilized in

the presently claimed methods are administered to an animal, as opposed to being directly applied to soil or growth media as in Swerdloff et al.

The Swerdloff et al. reference states that, while the composition and method of the invention are particularly suited for agricultural applications for prevention or inhibition of urease catalyzed hydrolysis of urea and/or nitrification, they can also be used in "other applications" where inhibition of the activity of urease and/or nitrification is desired. Swerdloff et al. mentions application of the compounds as feed additives (column 8, line 61). Administration as feed additives for "other purposes" (i.e., non-agricultural applications) could be for the purpose of improving the utilization of dietary nitrogen for animal production purposes, for example, but the reference certainly does not contemplate administration of compounds to an animal for the purpose of affecting the conversion of nitrogen based compounds after waste products are excreted from the animal.

Swerdloff et al. and Klopfenstein et al. focus on different times of action on nitrogen containing compounds. Klopfenstein et al. refers to specialized feed additives at page 6, first column, lines 11-12 and Swerdloff et al. feed additives or urease inhibition in mammalian urinary tracts at column 8, lines 59-62. However, these applications take effect within the animal. Alternatively, Swerdloff et al. contemplates applying compounds directly to soil to reduce loss of soil nitrogen. Based on the two references, one of ordinary skill in the art would have had no reason to develop the presently claimed methods, wherein waste acts as a carrier so that treatment substance affects the conversion of nitrogen containing compounds once the waste is excreted from an animal.

In view of the foregoing, the combination of Klopfenstein et al and Swerdloff et al. would not have provided reason to one of ordinary skill in the art to develop the presently claimed methods.

No Reasonable Expectation of Success

The Supreme Court in *KSR International Co v. Teleflex Inc.*, reaffirmed that a rationale to support a conclusion of obviousness is that an invention was "obvious to try"- choosing from a finite number of identified, predictable solutions, as long as there was with a reasonable expectation of success. In the present case, the Examiner has not made a proper *prima facie* case of obviousness because the combination of cited references would not provide one of ordinary

skill in the art with the required reasonable expectation of success. As explained in M.P.E.P. § 2143.02, references cited must provide some expectation of success in the claimed combination to sustain an obviousness rejection.

The Applicants have discovered that nitrogen loss from soil exposed from waste from animals can be reduced by introducing treatment substances into animals, wherein waste excreted by the animal acts as a carrier so that the treatment substance affects the conversion of nitrogen containing compounds once the waste is excreted from the animal. Based on the prior art of record, there was no reasonable expectation that such a method would be successful because it would have been difficult to predict and control how compounds would be metabolized once administered to an animal. The Applicant has determined that, when substances are administered internally to an animal, the animal waste acts as a carrier for the substances, so that the substances are able to affect the conversion of nitrogen containing compounds after the animal waste is excreted from the animal.

The mere fact that references can be combined or modified does not automatically mean that they render an invention obvious. The question is whether the results of combining the documents would have been predictable with a reasonable expectation of success to one of ordinary skill in the art. None of the cited references, either alone or in combination, contemplated administering a treatment substance to an animal and excreting waste from the animal, wherein the waste acts as a carrier so that the treatment substance affects the conversion of nitrogen containing compounds once the waste is excreted from the animal. Moreover, as noted above, metabolism of compounds and viability in waste excretions is not predictable. Therefore, there could have been no reasonable expectation of success in implementing the presently claimed methods.

In view of the foregoing remarks, Claims 28, 30, 37, 40, 49 and 51-52 are not obvious over the cited references. Accordingly, the Applicant respectfully requests that the rejection be withdrawn.

Klopfenstein et al. in view of Swerdloff et al., Cookson et al. and Davis et al.

Claims 28, 40 and 42 were rejected under 35 U.S.C. § 103(a)as being unpatentable over Klopfenstein et al. (*supra*), in further view of Swerdloff et al. (*supra*), Cookson et al. (2002 *Soil*

Biology & Biochemistry **34**:1461-1465) and Davis et al. (1956 *J Animal Science* **15**:515-522). Cookson et al. teach that dicyandiamide (DCD) is a nitrification inhibitor and Davis et al. teach that DCD was a know nigrogen source in animal feed. However, neither reference fills the gap between the presently claimed methods and the combination of Klopfenstein et al. and Swerdloff et al. as discussed above. Accordingly, Claims 28, 40 and 42 are not obvious in view of the cited references and the Applicant respectfully requests that the rejection be withdrawn.

Klopfenstein et al. in view of Swerdloff et al., Cookson et al., Davis et al. and Hamilton

Claims 28 and 48 were rejected under 35 U.S.C. § 103(a)as being unpatentable over Klopfenstein et al. (*supra*), in view of Swerdloff et al. (*supra*), Cookson et al. (*supra*), Davis et al. (*supra*) and Hamilton (1991 Basic Cattle Nutrition Fact Sheet; http://www.omafra.gov.on.ca/english/livestock/beef/facts/91-066.htm). Hamilton teaches that the rumen is the beginning of the digestive tract. Thus, the Examiner concluded that, upon oral administration of DCD, it would enter the rumen. However, in view of the distinctions discussed above regarding the presently claimed methods and the methods of Klopfenstein et al. and Swerdloff et al., Hamilton does not add any further information that would have provided any reason to the skilled artisan to develop the presently claimed methods that involve administering a treatment substance to an animal and excreting waste from the animal, wherein the waste acts as a carrier so that the treatment substance affects the conversion of nitrogen containing compounds once the waste is excreted from the animal. Accordingly, the Applicant respectfully requests that the rejection be withdrawn.

Klopfenstein et al. in view of Swerdloff et al and Zerulla et al.

Claims 28, 40 and 41 were rejected under 35 U.S.C. § 103(a)as being unpatentable over Klopfenstein et al. (*supra*), in view of Swerdloff et al. (*supra*) and Zerulla et al. (2001 *Biology and Fertility of Soils* **34**:79-84). Zerulla et al. teach that 3,4-dimethylopyrazole phosphate, as recited in present Claim 41, is a non-toxic nitrification inhibitor known to reduce the loss or minimize the loss of nitrate (nitrogen) when directly applied to soil. However, there is no additional information provided by Zerulla et al. that would have led the skilled artisan to develop the presently claimed methods that entail administering a treatment substance to an animal and excreting waste from the animal, wherein the waste acts as a carrier so that the treatment

substance affects the conversion of nitrogen containing compounds once the waste is excreted from the animal. Accordingly, the Applicant respectfully requests that the rejection be withdrawn.

Klopfenstein et al. in view of Swerdloff et al and Schaefer et al.

Claims 28, 49 and 50 were rejected under 35 U.S.C. § 103(a)as being unpatentable over Klopfenstein et al. (*supra*), in view of Swerdloff et al. (*supra*) and Schaefer et al. (U.S. Patent No. 5,505,968). Schaefer et al. is cited as teaching the administration of a supplement (additive) to an animal by adding it to the food (feed supplement) or via a drench. However, in view of the remarks above in connection with Klopfenstein et al. and Swerdloff et al., the disclosure of Schaefer et al. does not provide any additional information that would have led the skilled artisan to either develop the presently claimed methods or have any expectation of success in implementing the methods. Accordingly, the Applicant respectfully requests that the rejection be withdrawn.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

CONCLUSION

In view of Applicants' amendments to the Claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the

application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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